

to a cable modem termination system (CMTS) 20 through a second signal path 18 here shown as signal paths 18a-18d. It should be appreciated that the tunnel source 16 can functionally reside in a separate box upstream of the CMTS 20 as shown in Fig. 1. Alternatively, however, the tunnel source 16 can functionally reside within the CMTS 20 or the router 12.

The CMTS 20 includes a CMTS router 22 and a plurality of quadrature amplitude modulators (QAMs) 24a-24d generally denoted 24. Router 12 is also coupled to the CMTS 20, and in particular to the CMTS router 22, via a signal path 26. The purpose of the signal paths 14 and 26 will next be described in general overview.

In the system of the present invention, a packet encapsulation and tunneling procedure can be used which includes two different IP address spaces associated with IP over cable offerings. A first address space (referred to as an L address space) is for existing single-channel users operating in accordance with the Data Over Cable Standard Interface Specification (DOCSIS). A second address space (referred to as an F address space) is for FastChannel users (i.e. users of the protocol described herein). The router 12 is adjacent to and upstream of the CMTS 20, such that, if a packet having a destination address in the L address space is received, the router ~~16~~ 12 directly routes the packet to the CMTS 20 via signal path 26 without passing through the tunneling node 16. If, however, a packet having a destination address in the F address space is received, the router ~~16~~ 12 forwards the packet to the tunnel source 16. Tunnel source 16 receives data provided thereto from the router 12 and divides the serialized data stream into a plurality of parallel channels which are fed via the signal path 18a to the CMTS 20.

It should be noted that in Fig. 1, signals paths 18b-18d are shown in phantom to indicate that the parallel signals are logically separate but can be transmitted on a single physical signal path (e.g. a single wire) such as the signal path 18a.

Whether fed to the CMTS router 24 via the FastChannel path 14 or via the legacy path 26, the CMTS router 22 provides each of the signals to one of a plurality of modulators 24a-24d generally denoted 24. In this particular embodiment, where it is desirable to be compatible with